

Cape Light Compact

Program Overview: Cape and Vineyard Electrification Offering

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**Cape Light
Compact**



Working Together Toward A Smarter Energy Future

Who is the Cape Light Compact?

The **Cape Light Compact** is a municipal energy services organization operated by the 21 towns on Cape Cod and Martha's Vineyard formed in 1997

Mission: To serve our Cape Cod and Martha's Vineyard 205,000 customers through the delivery of proven energy efficiency programs, effective consumer advocacy, and a renewable competitive electric supply

Energy Efficiency Program Overview

- Cape Light Compact is one of six Program Administrators (PAs) of **Mass Save[®]**
 - **Mass Save[®]** is the collaborative statewide energy efficiency program available to residents and businesses within the state of Massachusetts
 - Cape Light Compact serves Cape Cod and Martha's Vineyard residents who heat with electric, oil, or propane
- EE Program is primarily funded through a monthly surcharge on residential and business electric bills

Supplier (NEXTERA ENERGY SERVICES)				
Generation Service Charge	650 kWh	X	0.10743	\$69.83
Subtotal Supplier Services				\$69.83
Delivery				
Customer Charge				\$7.00
Distribution Charge	650 kWh	X	0.07035	\$45.73
Transition Charge	650 kWh	X	-0.00117	-\$0.76
Transmission Charge	650 kWh	X	0.03524	\$22.91
Revenue Decoupling Charge	650 kWh	X	0.00299	\$1.94
Distributed Solar Charge	650 kWh	X	0.00123	\$0.80
Renewable Energy Charge	650 kWh	X	0.00050	\$0.33
Energy Efficiency	650 kWh	X	0.04312	\$28.03
Subtotal Delivery Services				\$105.97
Total Cost of Electricity				\$175.80



*Working Together Toward a
Smarter Energy Future*



ENERGY EFFICIENCY

- Energy Assessments
- Incentives and Rebates
- Financing Options



Energy Efficiency Policy Goals



Decarbonization



Equity



Customer experience

Quick Glimpse of Energy Efficiency in Massachusetts

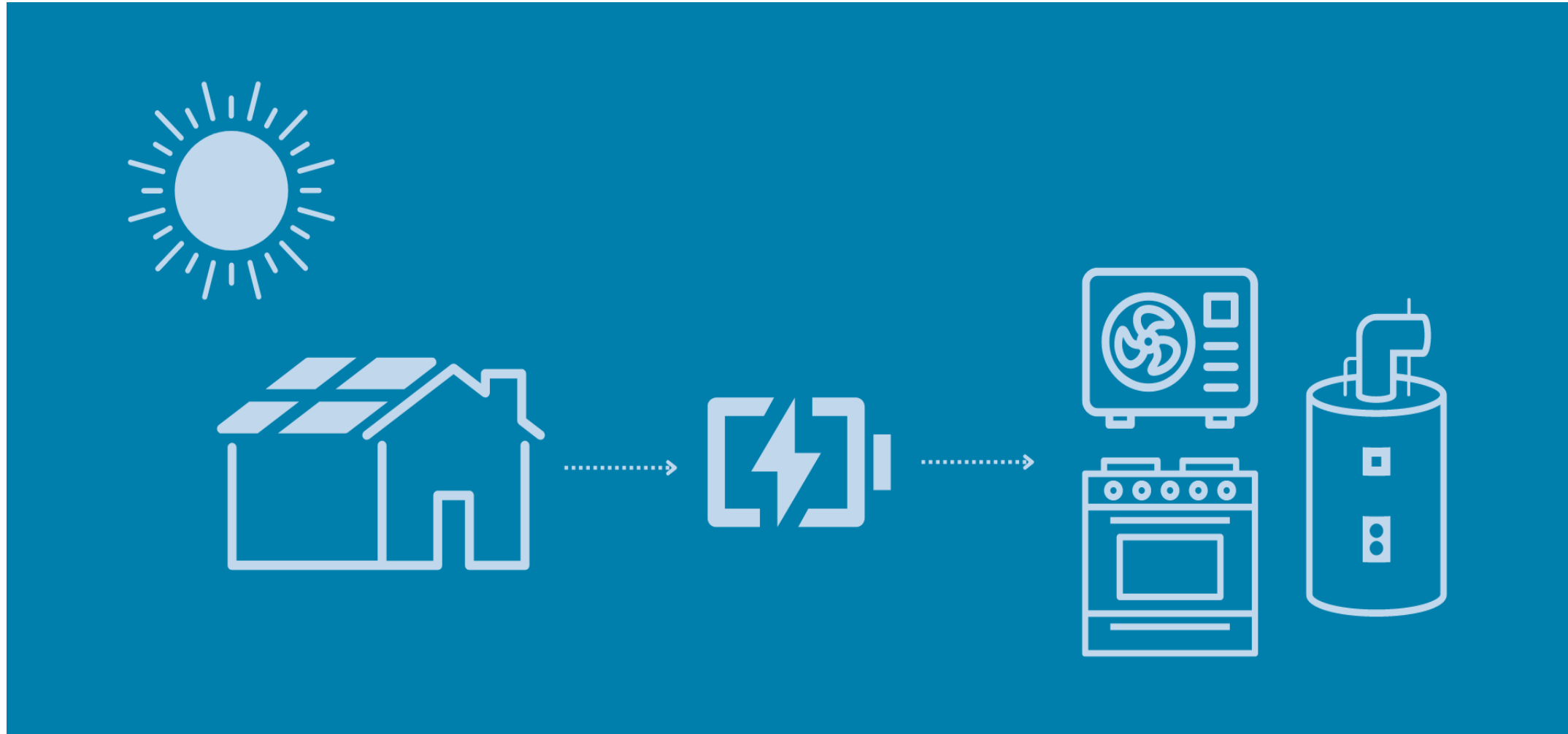
Massachusetts Green Communities Act (2008):

- Legislation to promote and advance renewable energy and significantly expand the energy efficiency effort in the state
 - Expansion of energy efficiency programs = increased budgets
 - Established mandatory charge for all electric consumers to fund energy efficiency programs (noted on prior slide)
- Creation of Three-Year Energy Efficiency Plan to be submitted to the Energy Efficiency Advisory Council (EEAC) for initial approval
 - After EEAC approval, the Three-Year Plan is submitted to Department of Public Utilities for final approval

Why was the Cape and Vineyard Electrification Offering Proposed?

- Massachusetts Green Communities Act (2008)
 - Updated in 2018 via the Act to Advance Clean Energy
 - Expanded the permissible scope of energy efficiency plans to include strategic electrification, energy storage, and other active demand management technologies that result in customers switching to renewable energy sources or other clean energy technologies.
- Snapshot of Cape Cod and Martha's Vineyard Solar Installations (2016-2018)
 - Only 8% of Cape Cod or Martha's Vineyard solar installs were in low-income census block groups
 - Only 2% of installations were for homes where residents earned 80% or less that state median income
- Cape Light Compact saw this as opportunity to serve this income demographic through the creation of the Cape and Vineyard Electrification Offering (CVEO)

CVEO = Decarbonization



What is the Cape and Vineyard Electrification Offering (CVEO)?

CVEO is a strategic electrification and energy optimization turnkey offering that combines home weatherization with the following technologies:

- Cold Climate Heat Pumps
- Solar PV
- Battery Storage
- Electric Stoves and Dryers (if applicable)
- Heat Pump Water Heaters (if applicable)
- Electric Panel Upgrades and other potential site barriers

Goal: To fully decarbonize properties on Cape Cod and Martha's Vineyard for low and moderate-income residents who heat with oil, propane, and/or electric resistance systems

Approval Status:

- CVEO was first proposed in 2018 submitted in the 2019-2021 Three-Year Energy Efficiency Plan
- CVEO was not approved by the Mass. Department of Public Utilities until December 2022...

CVEO 1.0: The Origin Story of CVEO

Participant Category	Number of Participants	Heat Pump Incentive	Solar Incentive	Battery Incentive	Notes
Income Eligible (DR) <60% SMI	175	100%	100%	100% Install Required	Participate in Connected Solutions 10 years
Moderate Income 61-80% SMI	175	100%	\$5k + Heat Loan Financing	100% Install Required	Participate in Connected Solutions 10 years
Ex. Mod Income 81-120% SMI	175	Market Rate Rebate (Dependent on Fuel Type and HP Type)	No Incentive	100% Install Required	Participate in Connected Solutions 10 years
Market Rate	175	Market Rate Rebate (Dependent on Fuel Type and HP Type)	No Incentive	100% Install Required	Participate in Connected Solutions 10 years

ConnectedSolutions Program: Active Demand Response



- Program initiative designed to help manage and reduce electricity demand during peak demand periods
 - Residents enrolls their qualified battery system into the program.
 - Residents earn incentives for allowing Cape Light Compact to tap into battery's store energy at time of high electricity demand
 - Average number of demand events/year: 30-60
 - Duration of demand event: 3 hours maximum
 - Event timing: 3 p.m. – 8 p.m.

CVEO 1.0: The Origin Story of CVEO (2018)



CVEO 1.0 was not initially approved by the Department of Public Utilities for the following reasons:

1. Determined that additional stakeholder input on the proposed structure of CVEO was necessary
2. Determined that the Compact must coordinate with NSTAR Electric to ensure the proposed active demand response offerings (participant enrollment in ConnectedSolutions Program) would not adversely impact the reliability of the local distribution system
3. Concerns of funding solar PV solely through energy efficiency funds without utilizing other available solar PV incentives and financing programs
4. Concerns about overall cost of the CVEO program (27.6 million as proposed)
5. Cape Light Compact to obtain support and approval from Department of Energy Resources' Energy Efficiency Advisory Council before submitting a second iteration of CVEO

CVEO 1.0 to 2.0: Redesign Process



Additional stakeholder input on the proposed structure of CVEO



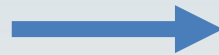
Compact engaged with EEAC members, DOER, Attorney General, Consultants, LEAN

Coordinate with NSTAR Electric to ensure the proposed active demand response (ADR) offerings (participant enrollment in ConnectedSolutions) would not adversely impact the reliability of the local distribution system



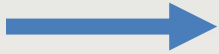
Compact and NSTAR Electric entered into a Memorandum of Agreement in late 2019.

Concerns of funding solar PV solely through energy efficiency funds without utilizing other available solar PV incentives and financing programs



Issued a Request for Information to solar and battery installers to determine best CVEO program structure

Concerns about overall cost of the CVEO program (27.6 million as proposed)



Reduce number of participants and leverage statewide programs and structure for solar component of CVEO

Obtain support and approval from Department of Energy Resources' Energy Efficiency Advisory Council (EEAC) before submitting a second iteration of CVEO



EEAC Council voted to unanimously support the second iteration of CVEO in April of 2020

CVEO 2.0: The Origin Story of CVEO



- CVEO 2.0 was submitted on May 15th, 2020.

Participant Category	Number of Participants	Heat Pump Incentive	Solar Incentive	Battery Incentive	Notes
Income Eligible (DR) <60% SMI	150	100%	100%	100% Install Required	Participate in Connected Solutions
Moderate Income 61-80% SMI	100	100%	75% of solar PV + battery storage---max copay of \$5,000	75% of solar PV + battery storage---max copay of \$5,000 Install Required	Participate in Connected Solutions

- Redesign Elements:
 - Reduced participants; only available to income eligible and moderate-income customers
 - Increased solar incentive for moderate-income participants.
 - Reduced budget from 27.6 million to 10.4 million

CVEO 2.0: The Origin Story of CVEO



- CVEO 2.0 was submitted on May 15th, 2020 for approval, but was not approved as proposed by the Department of Public Utilities for the following reasons:
 - Found that a distributed generation resource like solar PV could not be classified as an energy efficiency resource and programs relying on solar PV could not receive funding from sources set forth as Compact proposed
 - Found that ratepayer provided energy efficiency funding also could not be used to support the costs of installing battery storage as a backup generation resource for the purpose of deployment during power outages as Compact had proposed

CVEO 3.0: The Origin Story of CVEO



- August 11th , 2022 the Clean Energy Act was signed into law
 - Section 87A authorizes an electric energy efficiency Program Administrator to submit to the DPU “proposed low and moderate-income whole building efficiency, electrification, and greenhouse gas emissions reduction offerings to a limited number of participants within low and moderate-income customer groups.”
- Cape Light Compact decided to submit a third iteration of CVEO on October 27th, 2022 with additional proposed changes from CVEO 2.0:
 - Reduce participation levels further
 - Remove third party ownership structure from solar PV and battery
 - Battery storage no longer a requirement for all participants
 - Require full displacement of indoor fossil fuel cooking appliances
 - Portion of already approved Income Eligible budget to put towards CVEO for IE participants
 - Increase incentives for moderate income customers residing in deed-restricted properties
 - Use of Heat Loan to finance remaining balance for non-deed restricted participants

CVEO 3.0 Approved December 2022!

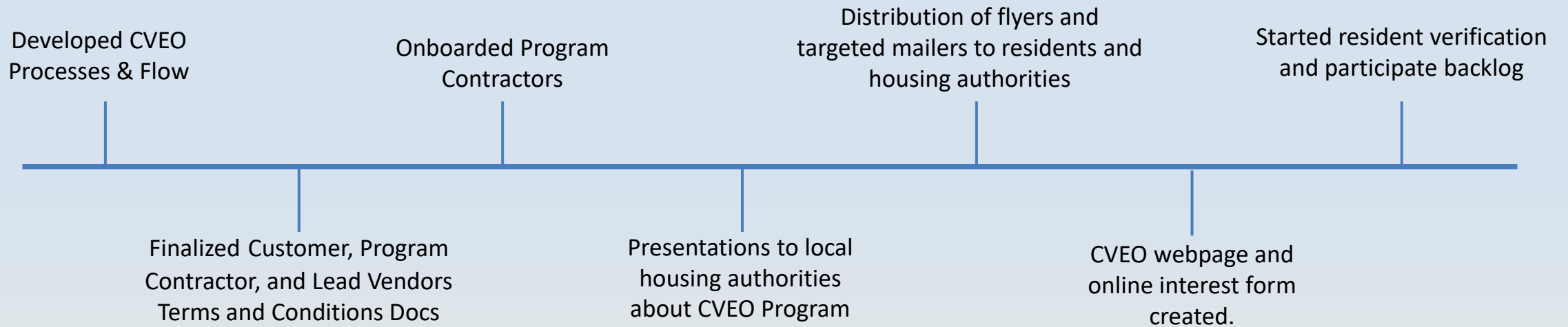


	Income Level (SMI)		Customers			HP Incentive	Solar PV Incentive	Storage Incentive
			2023	2024	Total			
Deed Restricted	Low-Income	below 60%	15	35	50	100% (Statewide)	100%	100%
	Affordable	61-80%	9	21	30	100%	100%	100%
Non-Deed Restricted	Moderate- Income	61-80%	6	14	20	80% (max customer copay of \$5,000, financed w/ Heat Loan)	\$15,000 incentive. Finance balance w/ Heat Loan	Finance w/ Heat Loan
Total Participants			30	70	<u>100</u>			

Getting CVEO 3.0 Up and Running



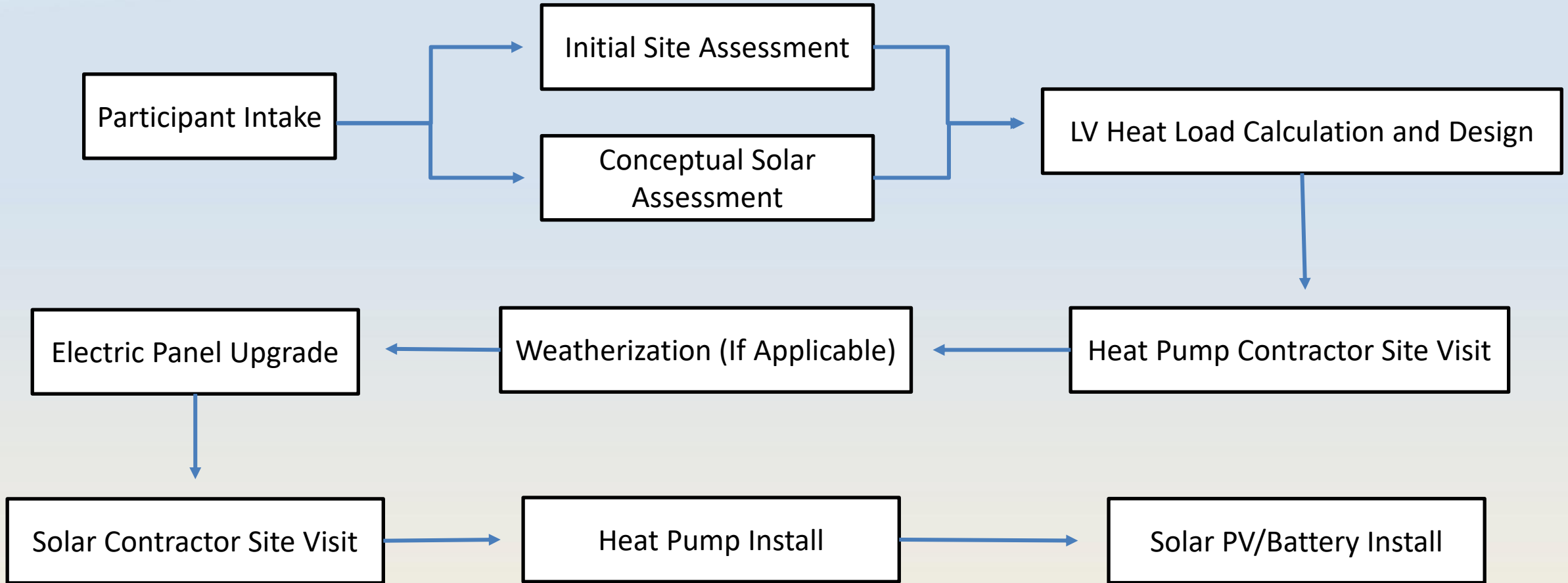
Jan-June 2023 Timeline



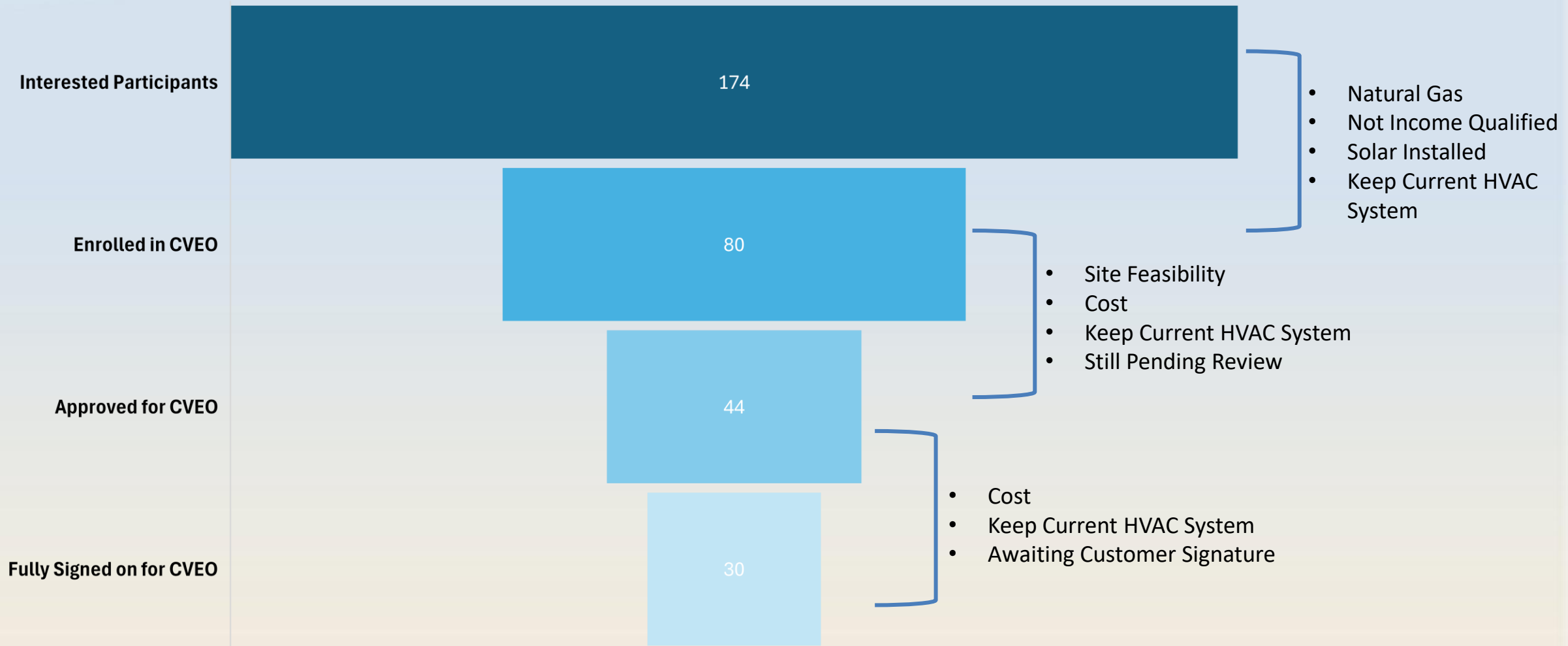
CVEO Implemented through Lead Vendor Model

- Conduct initial site assessment to determine feasibility
- Acts as point of contact for residents participating in CVEO
- Coordinates with heat pump and solar/battery subcontractors to scope the job and reviews technical and cost elements of program technologies.
- Submits project proposal to Cape Light Compact for approval
- Coordinates installation schedule on behalf of program participant and among contractors
- Collect all relevant data and information needed for reporting and evaluation

CVEO Flow



The Current State of CVEO



CVEO: Initial Lessons Learned



Many properties are not “CVEO ready” for all program technologies for one reason or another:

- Solar
 - Roof replacement necessary for install
 - Shading
- Heat Pumps/Electrical
 - Most properties moving from fossil fuel to electric heating system requires electric panel upgrade.
 - Some properties have underground utilities; trenchwork required.
- Batteries
 - Many of the properties enrolled in CVEO are not suitable for batteries
 - No basement and/or enclosed garage
- Pre-Weatherization Barriers

CVEO: Initial Lessons Learned



Costs:

- Solar
 - Estimated: \$28,875 (7.5 kW system projected)
 - Assumption: \$3,850/kW
 - Actual: \$33,151 (7.84 kW system avg)
 - Actual: \$ 4,228/kW

- Heat Pump
 - Estimated: \$13,000-\$25,000
 - Actual: \$18,000-\$55,000
 - Roughly \$10k per ton
 - Higher cost on Martha's Vineyard compared to Cape Cod

- Batteries
 - Roughly \$18k per battery in line with projection

- Additional Cost Considerations
 - Complete disablement/removal of fossil fuel HVAC systems: ~ \$3,000
 - Electrical Service: \$3,000-\$21,000
 - 100-200 Amp Upgrade
 - Trench work for underground utilities
 - Wiring and line sets
 - Roof replacements for Income Eligible residents: \$6,000-\$20,000

Future Forecast for Solar PV & Battery Storage in Massachusetts Energy Efficiency Programs:



- Program Administrators in process of crafting 2025-2027 Three Year Energy Efficiency Plan
- Plan will see a shift from traditional home energy assessment to “decarbonization assessment”
 - Additional data points to be collected related to solar and battery storage
 - Scale and scope of these data points still being worked on.
 - Introduction of turnkey decarbonization pathway for moderate income residents
 - Heat Loan continued to be utilized to finance battery installations

Thank You!

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